

CLAIMS

What is claimed is:

1. In a method of making fiberglass insulation material by contacting molten glass fibers with an aqueous phenol-formaldehyde resin binder to form coated fiberglass, accumulating and curing the coated fiberglass, and disposing of the unused aqueous phenol-formaldehyde resin binder, the improvement comprising:

- (a) contacting a first portion of the unused aqueous phenol-formaldehyde resin binder with sodium hydroxide to liberate free ammonia,
- (b) directing the liberated ammonia to a scrubber,
- (c) contacting said first portion of the unused aqueous phenol-formaldehyde resin binder with calcium hydroxide to form insoluble calcium phenate,
- (d) separating the insoluble calcium phenate and other solids from the aqueous components to provide substantially clean water, and
- (e) recycling the substantially clean water as makeup water for new binder.

2. The method of claim 1 wherein said unused aqueous phenol-formaldehyde resin binder is contacted with sodium hydroxide in an amount sufficient to adjust the pH of the aqueous solution to about 13.

3. The method of claim 1 wherein at least a portion of said insoluble calcium phenate and other solids is recycled to contact a second portion of unused aqueous phenol-formaldehyde resin binder and to form a second portion of insoluble calcium phenate and other solids.

4. The method of claim 3 wherein said second portion of unused aqueous phenol-formaldehyde resin binder is contacted with recycled insoluble calcium phenate and other solids and with fresh calcium hydroxide.

5. The method of claim 3 wherein said second portion of unused aqueous phenol-formaldehyde resin binder is contacted with recycled insoluble calcium phenate and other solids, with fresh calcium hydroxide, and with fresh sodium hydroxide.

6. The method of claim 3 wherein said second portion of unused aqueous phenol-formaldehyde resin binder is contacted with about 80% of said insoluble calcium phenate and other solids, about 10% fresh calcium hydroxide, about 5% fresh sodium hydroxide, and about 5% water.

7. The method of claim 1 wherein said sodium hydroxide is an aqueous solution of sodium hydroxide.

8. A method for removing contaminants from an aqueous process stream comprising phenol-formaldehyde resin and ammonium hydroxide, said method comprising:

(a) mixing an alkali metal hydroxide with the aqueous stream to:

(i) raise the pH to about 13,

(ii) replace ammonium ions in the ammonium hydroxide with alkali metal

ions, and

(iii) liberate free ammonia;

(b) mixing an alkaline earth metal salt with the aqueous stream to contact the phenol-formaldehyde resin and form an insoluble alkaline earth metal phenate; and

(c) filtering out the insoluble phenate.

9. The method of claim 8 wherein said alkali metal hydroxide is sodium hydroxide.

10. The method of claim 8 wherein said alkali metal hydroxide is potassium hydroxide.

11. The method of claim 8 wherein said alkali metal hydroxide is lithium hydroxide.

12. The method of claim 8 wherein said alkaline earth metal salt is a calcium salt.

13. The method of claim 12 wherein said calcium salt is calcium chloride.

14. The method of claim 12 wherein said calcium salt is calcium nitrate.

15. The method of claim 12 wherein said calcium salt is calcium sulfate.

16. The method of claim 12 wherein said calcium salt is calcium acetate.
17. The method of claim 8 wherein said alkaline earth metal salt is a magnesium salt.
18. The method of claim 17 wherein said calcium salt is magnesium chloride.
19. The method of claim 17 wherein said calcium salt is magnesium nitrate.
20. The method of claim 17 wherein said calcium salt is magnesium sulfate.
21. The method of claim 17 wherein said calcium salt is magnesium acetate.